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FEDERAL - STATE - PRIVATE  
COOPERATIVE SNOW SURVEYS

U. S. DEPT. OF AGRICULTURE  
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CURRENT SERIAL RECORDS

**WATER SUPPLY OUTLOOK**  
and  
**FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS**  
for  
**ARIZONA**

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE,  
SALT RIVER VALLEY WATER USERS ASSOCIATION  
and  
ARIZONA AGRICULTURAL EXPERIMENT STATION

Data included in this report were obtained by the agencies  
named above in cooperation with the Federal, State and pri-  
vate organizations listed on the last page of this report.

||||||| AS OF |||||||  
**FEB. 1, 1966**



# UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

## To Recipients of Water Supply Outlook Reports:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season as they affect runoff will add to be an effective average. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1400 snow courses in Western United States and in the Columbia Basin in British Columbia. In the near future, it is anticipated that automatic snow water equivalent sensing devices along with radio telemetry will provide a continuous record of snow water equivalent at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data or reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

Listed below are water supply outlook reports based on Federal-State-Private Cooperative snow surveys. Those published by the Soil Conservation Service may be obtained from Soil Conservation Service, Room 507, Federal Building, 701 N. W. Glisan, Portland, Oregon 97209.

### PUBLISHED BY SOIL CONSERVATION SERVICE

<u>REPORTS</u>	<u>ISSUED</u>	<u>LOCATION</u>	<u>COOPERATING WITH</u>
RIVER BASINS			
WESTERN UNITED STATES _____	MONTHLY (FEB.-MAY) _____	PORTLAND, OREGON _____	ALL COOPERATORS
BASIC DATA SUMMARY _____	OCTOBER 1 _____	PORTLAND, OREGON _____	ALL COOPERATORS
STATES			
ALASKA _____	MONTHLY (MAR.-MAY) _____	PALMER, ALASKA _____	ALASKA S.C.D.
ARIZONA _____	SEMI-MONTHLY _____ (JAN.15 - APR.1)	PHOENIX, ARIZONA _____	SALT R. VALLEY WATER USERS ASSOC. ARIZ. AGR. EXP. STATION
COLORADO AND NEW MEXICO _____	MONTHLY (FEB.-MAY) _____	FORT COLLINS, COLORADO _____	COLO. STATE UNIVERSITY COLO. STATE ENGINEER N. MEX. STATE ENGINEER
IDAHO _____	MONTHLY (JAN.-JUNE) _____	BOISE, IDAHO _____	IDAHO STATE RECLAMATION ENGINEER
MONTANA _____	MONTHLY (JAN.-JUNE) _____	BOZEMAN, MONTANA _____	MONT. AGR. EXP. STATION
NEVADA _____	MONTHLY (JAN.-MAY) _____	RENO, NEVADA _____	NEVADA DEPT. OF CONSERVATION AND NATURAL RESOURCES - DIVISION OF WATER RESOURCES
OREGON _____	MONTHLY (JAN.-JUNE) _____	PORTLAND, OREGON _____	OREG. STATE UNIVERSITY OREGON STATE ENGINEER
UTAH _____	MONTHLY (JAN.-JUNE) _____	SALT LAKE CITY, UTAH _____	UTAH STATE ENGINEER
WASHINGTON _____	MONTHLY (FEB.-JUNE) _____	SPOKANE, WASHINGTON _____	WN. STATE DEPT. OF CONSERVATION
WYOMING _____	MONTHLY (FEB.-JUNE) _____	CASPER, WYOMING _____	WYOMING STATE ENGINEER

### PUBLISHED BY OTHER AGENCIES

<u>REPORTS</u>	<u>ISSUED</u>	<u>AGENCY</u>
BRITISH COLUMBIA _____	MONTHLY (FEB.-JUNE) _____	WATER RESOURCES SERVICE, DEPT. OF LANDS, FOREST AND WATER RESOURCES, PARLIAMENT BLDG., VICTORIA, B.C., CANADA
CALIFORNIA _____	MONTHLY (FEB.-MAY) _____	CALIF. DEPT. OF WATER RESOURCES, P.O. BOX 388, SACRAMENTO, CALIF.

**WATER SUPPLY OUTLOOK**  
and  
**FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS**  
for  
**ARIZONA**

(Salt, Verde, Gila and Part of Lower Colorado River Basin)

*Report prepared by*

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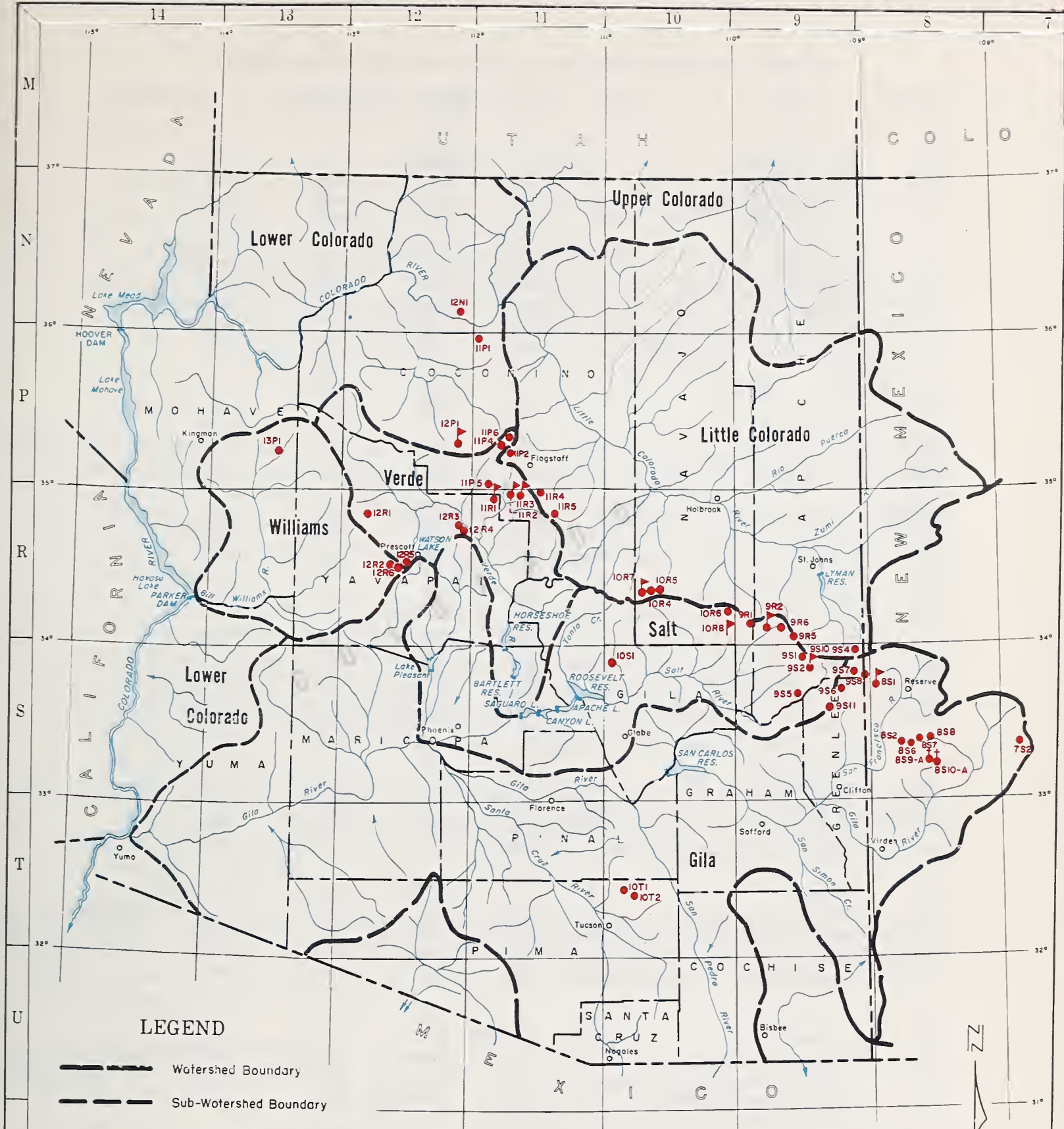
*Issued by*

MERRITT D. BURDICK  
STATE CONSERVATIONIST  
SOIL CONSERVATION SERVICE

VICTOR I. CORBELL  
PRESIDENT  
SALT RIVER VALLEY WATER USERS ASSOCIATION



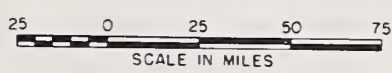




# LEGEND

- Watershed Boundary
- Sub-Watershed Boundary
- 13U10 • Snow Course
- 13U9 ▲ Snow Course and Soil Moisture Station
- 13U8 ▲ Soil Moisture Station Only
- 13U8 † Aerial Marker

## ARIZONA COOPERATIVE SNOW SURVEYS Snow Courses and Sub-Watersheds



# INDEX to SNOW COURSES and SOIL MOISTURE STATIONS

Number**	Name	Sec	Twp	Rge***	Elevation	River Basin
9S1	Baldy (p)	28	7N	27E	9125	Little Colorado
10T1	Bear Wallow	6	12S	16E	8100	Gila
9S6	Beaver Head	13	4N	30E	8000	San Francisco
9S10-*	Black River Divide	10	6N	27E	9400	Salt
12N1	Bright Angel	34	33N	3E	8400	Lower Colorado
12R1	Camp Wood	3	16N	6W	5700	Verde
10R7-M	Canyon Creek #2	18	11N	15E	7500	Little Colorado
11R2-M	Casner Park	19	18N	8E	6930	Verde
12P1-M	Chalender	27	22N	3E	7100	Verde
12R6	Copper Basin Divide(p)	23	13N	3W	6720	Verde
10R8 -*	Corduoy Creek	4	8N	21E	6000	Salt
9S7	Coronado Trail	26	5N	30E	8000	San Francisco
10R6	Forest Dale	2	9N	21E	6430	Salt
11P2	Fort Valley (p)	22	22N	6E	7350	Little Colorado
9R5	Ft. Apache	18	7N	27E	9160	Little Colorado
8S1-M	Frisco Divide	31	6S	20W****	8000	San Francisco
12R4	Gaddes Canyon	11	15N	2E	7600	Verde
10R5	Gentry	36	11N	15E	7650	Salt
11P1	Grand Canyon	21	30N	4E	7500	Lower Colorado
9S11	Hannagan Meadows (p)	19	3N	29E	9090	Salt
11R5	Happy Jack	30	17N	9E	7630	Verde
10R4	Heber (p)	28	11N	15E	7600	Little Colorado
8S9-A	Hummingbird	19	11S	17E	10550	San Francisco
8S6	Ice King	6	11S	18W****	8020	San Francisco
7S2	Inman	6	11S	10W****	7800	Gila
12R2	Iron Springs	22	14N	3W	6200	Bill Williams
9S2	Maverick Fork (p)	13	6N	27E	9150	Salt
9R2-M	McNary	23	8N	23E	7200	Salt
9R1	Milk Ranch	33	8N	23E	7000	Salt
12R3	Mingus Mountain	3	15N	2E	7100	Verde
8S2	Mogollon	2	11S	19W****	7000	San Francisco
11R4	Mormon Lake	13	18N	8E	7350	Little Colorado
11R3-M	Mormon Mountain (p)	14	18N	8E	7500	Verde
11R1-M	Munds Park	7	18N	7E	6500	Verde
11P5-M	Newman Park	25	19N	6E	6750	Verde
9S4	Nutrioso	23	6N	30E	8500	San Francisco
9S5	Pacheta	27	4-1/2N	27E	7800	Salt
8S7	Redstone Trail	5	11S	18W****	8600	San Francisco
10T2	Rose Canyon	15	12S	16E	7300	Gila
8S8	Silver Creek Divide	4	11S	18W****	9000	San Francisco
11P4	Snow Bowl #1 (p)	36	23N	6E	10260	Verde
11P6	Snow Bowl #2	31	23N	7E	11000	Verde
9S8	State Line	6	6S	21W****	8000	San Francisco
12R5	White Spar	19	13N	2W	6000	Verde
8S10-A	Whitewater	19	11S	17E	10750	Gila
13P1	Willow Ranch	16	21N	11W	5000	Bill Williams
9R6	Wilson Lake	4	7N	26E	9000	Salt
10S1	Workman Creek	33	6N	14E	6900	Salt

\* SOIL MOISTURE STATION ONLY

\*\* NUMBER INDICATES LOCATION OF SNOW COURSE WITHIN COORDINATE RECTANGLE, THUS 9N1 IS COURSE #1 IN COORDINATE RECTANGLE 9N.

\*\*\* ALL IN GILA AND SALT RIVER BASE AND MERIDIAN EXCEPT WHERE OTHERWISE INDICATED.

\*\*\*\* NEW MEXICO PRINCIPAL MERIDIAN

M SOIL MOISTURE STATION INSTALLED ON OR IN VICINITY OF SNOW COURSE.

(p) STORAGE GAGE INSTALLED ON OR IN VICINITY OF SNOW COURSE.

A AERIAL SNOW DEPTH GAGE



# ARIZONA WATER SUPPLY OUTLOOK

FEBRUARY 1, 1966

\* \* \* \* \*  
\*       The Water Supply Outlook for Arizona is excellent! \*  
\*       Reservoir Storage is at the highest level in 25 Years. \*  
\*       Heavy snow cover is present on the major watersheds and \*  
\*       spring runoff is expected to be about twice average. \*  
\* \* \* \* \*

SNOW COVER: The heaviest snow cover is on the Gila River Watershed with a snow pack  $2\frac{1}{2}$  times average for this date. On the Salt River Watershed the snow cover is 58% above average and on the Verde 19% above average. Generally speaking, snow cover this year is about like it was in 1952 and 1960 on this date, but considerably less than there was in 1962.

RESERVOIR STORAGE: Arizona Reservoirs presently contain 2 to 6 times the average stored water on this date. The Salt River Project Reservoirs contain 90% of capacity while San Carlos Reservoir is the lowest in the state containing 31% of capacity. This is, however, 577% of average. Except for the Colorado River Reservoirs, San Carlos Reservoir is the only major Reservoir in the state not expected to spill this year.

PRECIPITATION: January precipitation was less than 50% of average on the major watersheds. For the November through January period, however, precipitation has been about twice average, because of the extremely heavy December storms.

SOIL MOISTURE: Although soils are drying slightly on the surface at lower elevations, soil moisture is generally very high. This is especially true at the higher elevations where some observations indicate moisture levels above field capacity.

STREAMFLOW AND WATER SUPPLY: Streamflow was about twice average during January although this was only  $\frac{1}{3}$  of the amount received during December. A total of 824,000 acre feet of water is forecast for the combined flow of the Salt, Verde, and Tonto streams during the February through May period. This is 186% of the 1948-62 average. The Gila at Safford is predicted to produce 228,000 acre feet during this period.

Water supplies will be abundant in all areas in Arizona obtaining water from surface runoff. Carry-over storage will be available for future seasons on some projects.

DEPARTMENT OF CHEMISTRY

TO THE HONORABLE THE PRESIDENT OF THE UNIVERSITY OF CHICAGO  
FROM THE DEPARTMENT OF CHEMISTRY  
SUBJECT: REPORT ON THE PROGRESS OF THE RESEARCHES  
CONDUCTED IN THE DEPARTMENT OF CHEMISTRY  
DURING THE YEAR 1900

The following report contains a summary of the work done in the Department of Chemistry during the year 1900. It is divided into two parts, the first of which deals with the general progress of the department, and the second with the results of the researches conducted in the various laboratories.

The first part of the report deals with the general progress of the department. It contains a summary of the work done in the various laboratories, and a statement of the results of the researches conducted in each of them. It also contains a statement of the progress of the department as a whole, and of the work done in the various laboratories during the year 1900.

The second part of the report deals with the results of the researches conducted in the various laboratories. It contains a summary of the work done in each of the laboratories, and a statement of the results of the researches conducted in each of them.

The first of the laboratories mentioned in the report is the Laboratory of Organic Chemistry. It contains a summary of the work done in this laboratory, and a statement of the results of the researches conducted in it.

The second of the laboratories mentioned in the report is the Laboratory of Inorganic Chemistry. It contains a summary of the work done in this laboratory, and a statement of the results of the researches conducted in it.

The third of the laboratories mentioned in the report is the Laboratory of Physical Chemistry. It contains a summary of the work done in this laboratory, and a statement of the results of the researches conducted in it.

# STREAM FLOW FORECASTS - FEBRUARY 1, 1966

The following summarized runoff forecasts are based principally on mountain snow cover and on the assumption that precipitation and temperature will be near average from the present time to the end of the forecast period. Appreciable deviations from normal of temperature and/or precipitation will correspondingly modify these forecasts.

SUB-WATERSHED, STREAM and STATION	SEASONAL STREAM FLOW IN THOUSANDS OF ACRE FEET					
	FORECAST PERIOD: JANUARY - MAY, INCLUSIVE					
	Forecast	Percent	Measured Runoff			1948-62
	Runoff	15-Year	1965	1964	1963	Average
	1966	Average				
Salt River near Roosevelt	616	193	588.7	112.6	206.7	319.1
Tonto Creek near Roosevelt	118	232	131.3	11.7	10.0	50.9
Verde River above Horseshoe	340	180	514.0	117.8	59.1	185.8
Gila River near Gila	112	203	47.2	19.0	52.8	55.1
Gila River near Virden	150	221	52.4	20.0	67.8	67.8
Gila River near Solomon	315	233	109.1	36.6	125.6	135.3
Frisco River at Clifton	155	226	59.6	17.0	54.6	68.7
Frisco River near Glenwood	60	225	24.4	5.1	13.9	26.6
Little Colorado River above Lyman Dam (Jan.--June, Incl.)	21	214	21.1	5.7	3.1	9.8



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21, BEDFORD SQUARE, LONDON, W.C.1A 2E

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STATUS OF ARIZONA RESERVOIR STORAGE - ABOUT FEBRUARY 1, 1966

SUB- WATERSHED and/or STREAM	RESERVOIR	USABLE CAPACITY 1000's ACRE FT.	USABLE STORAGE - 1000's ACRE FEET			
			1966	1965	1964	15-Year Average 1948-62
<u>GILA RIVER DRAINAGE</u>						
Agua Fria	Lake Pleasant	157.6	157.2	20.1	13.2	29.4
Granite	Watson Lake	4.7	4.5	2.3	3.9	---
Gila	San Carlos	1,206.0	375.1	56.7	64.9	65.0
Verde	Bartlett	179.5	158.7	84.0	11.1	66.0
Verde	Horseshoe	142.8	110.8	19.3	8.3	16.6
Salt	Roosevelt	1,382.0	1,240.2	395.8	434.8	416.1
Salt	Apache	245.0	240.0	229.9	238.8	194.7
Salt	Canyon	58.0	52.3	39.2	51.5	45.1
Salt	Saguaro	70.0	59.8	60.6	61.7	45.9
<u>COLORADO RIVER DRAINAGE</u>						
Colorado	Lake Havasu	619.4	538.2	542.7	549.5	541.4
Colorado	Lake Mohave	1,810.0	1,767.8	1,680.0	1,696.0	1,522.3*
Colorado	Lake Mead	27,207.0	15,502.0	11,289.0	15,441.0	17,424.7
Colorado	Lake Powell	25,002.0	8,804.1	6,197.3	3,113.0	---
Little Colo.	Lyman	30.6	12.9	9.8	10.0	6.9
Little Colo.	Show Low Lake	5.1	5.1	3.1	0.8	0.8*

\* Average is for less than 15 years of record in the 1948-62 period.

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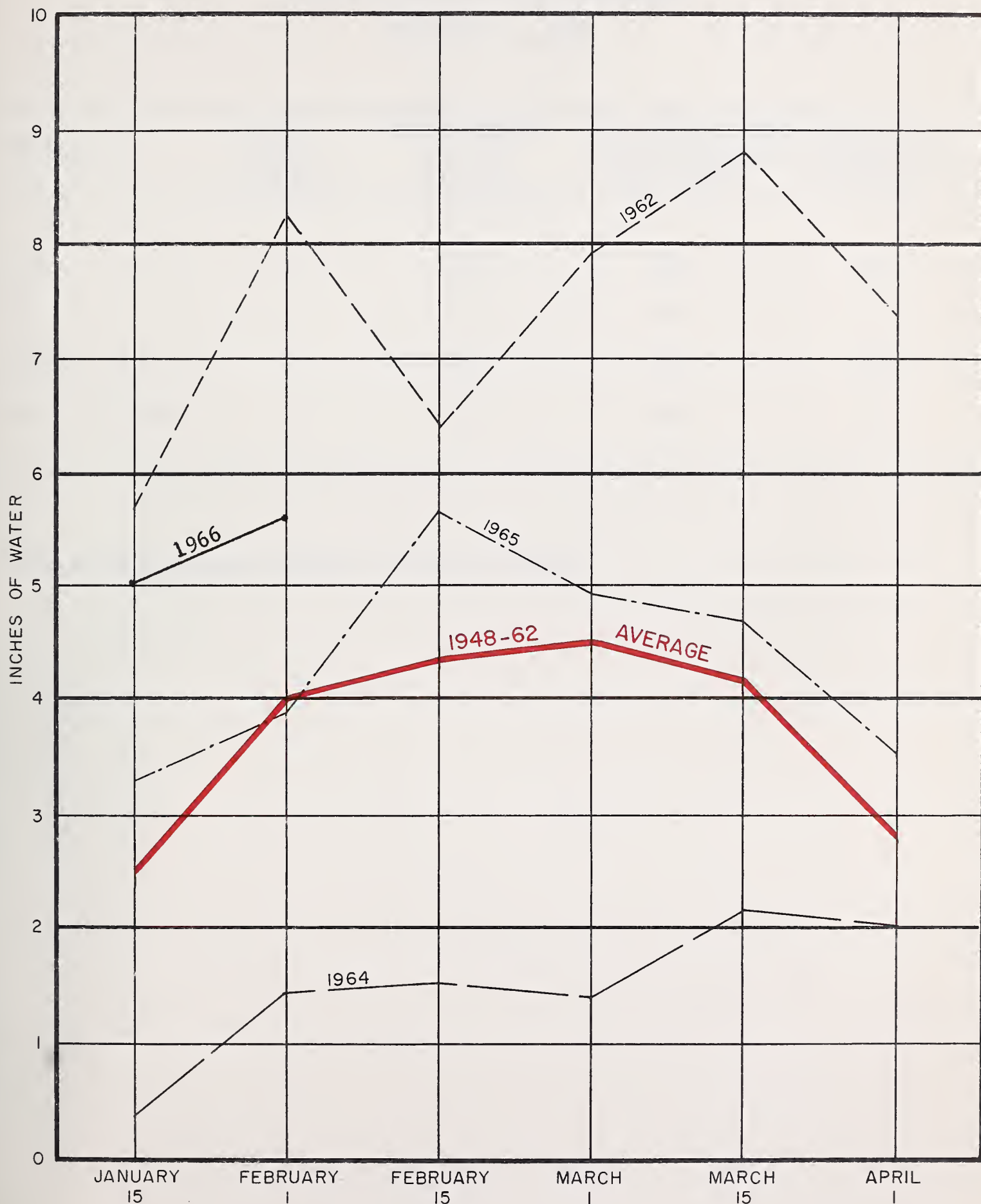
1948

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# RELATIVE SNOW WATER ACCUMULATION ARIZONA

FEBRUARY 1, 1966



*This graph represents the average snow water content on eleven selected snow courses on Arizona Sub-Watersheds.*



SNOW COVER ON ARIZONA WATERSHEDS

FEBRUARY 1, 1966

Watershed	No. of Courses Average	Water Content of Snow (Inches)	This Year's Water Content of Snow Expressed as Percent of:	
			Last Year	Average *
Gila	7	5.1	252	245
Salt	10	6.9	156	158
Verde	7	4.5	200	118
Little Colorado	4	6.5	118	141

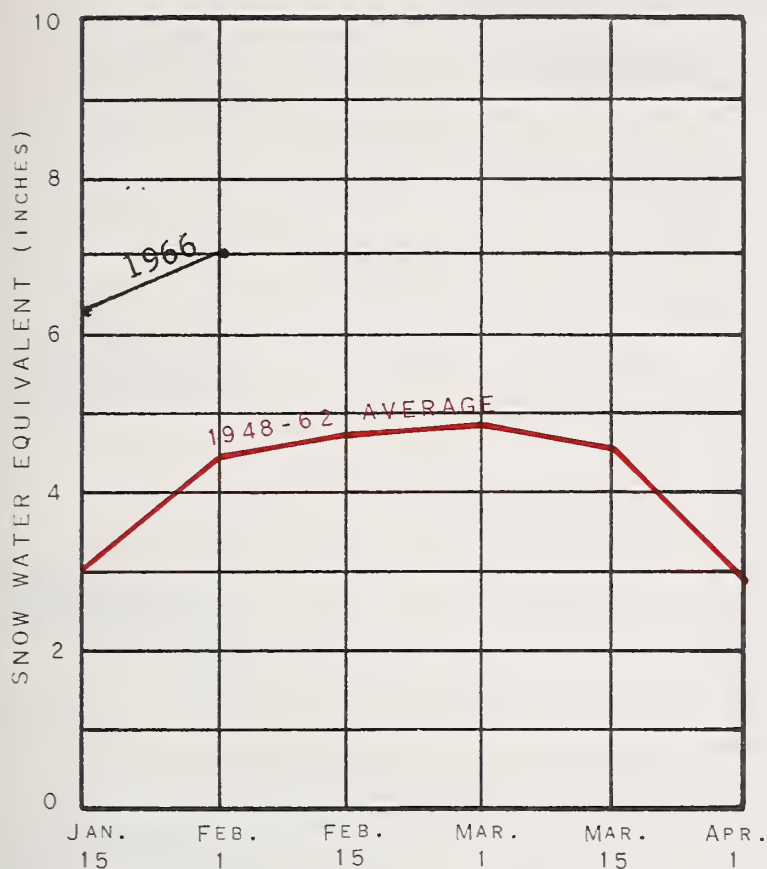
\* Actual or Estimated 1948-62, 15-Year Average





1966

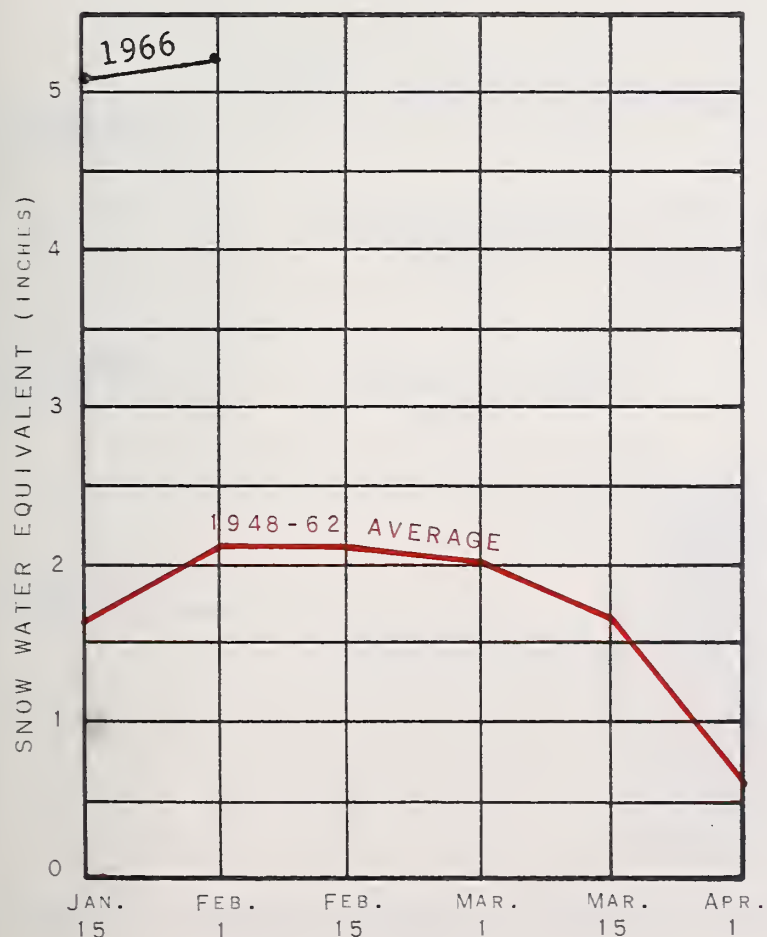
# ARIZONA SNOW COVER BY WATERSHEDS



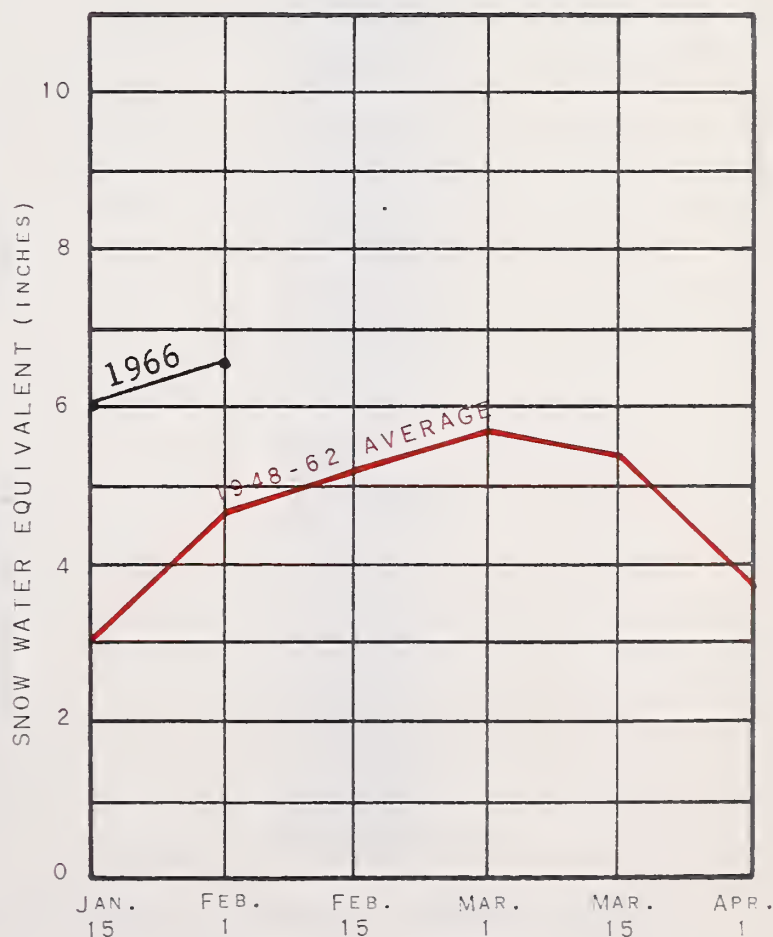
SALT RIVER



VERDE RIVER



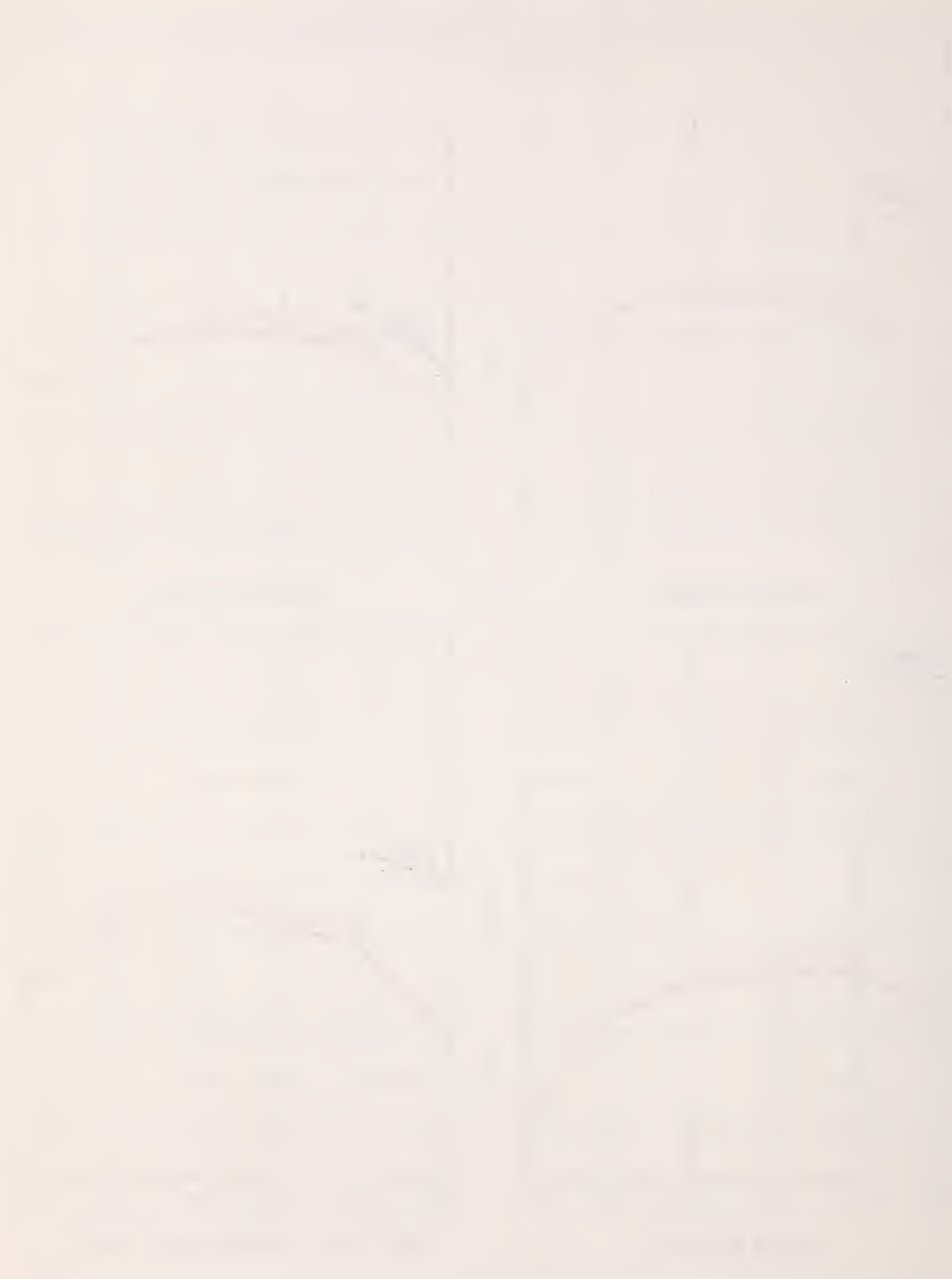
GILA RIVER



LITTLE COLORADO RIVER

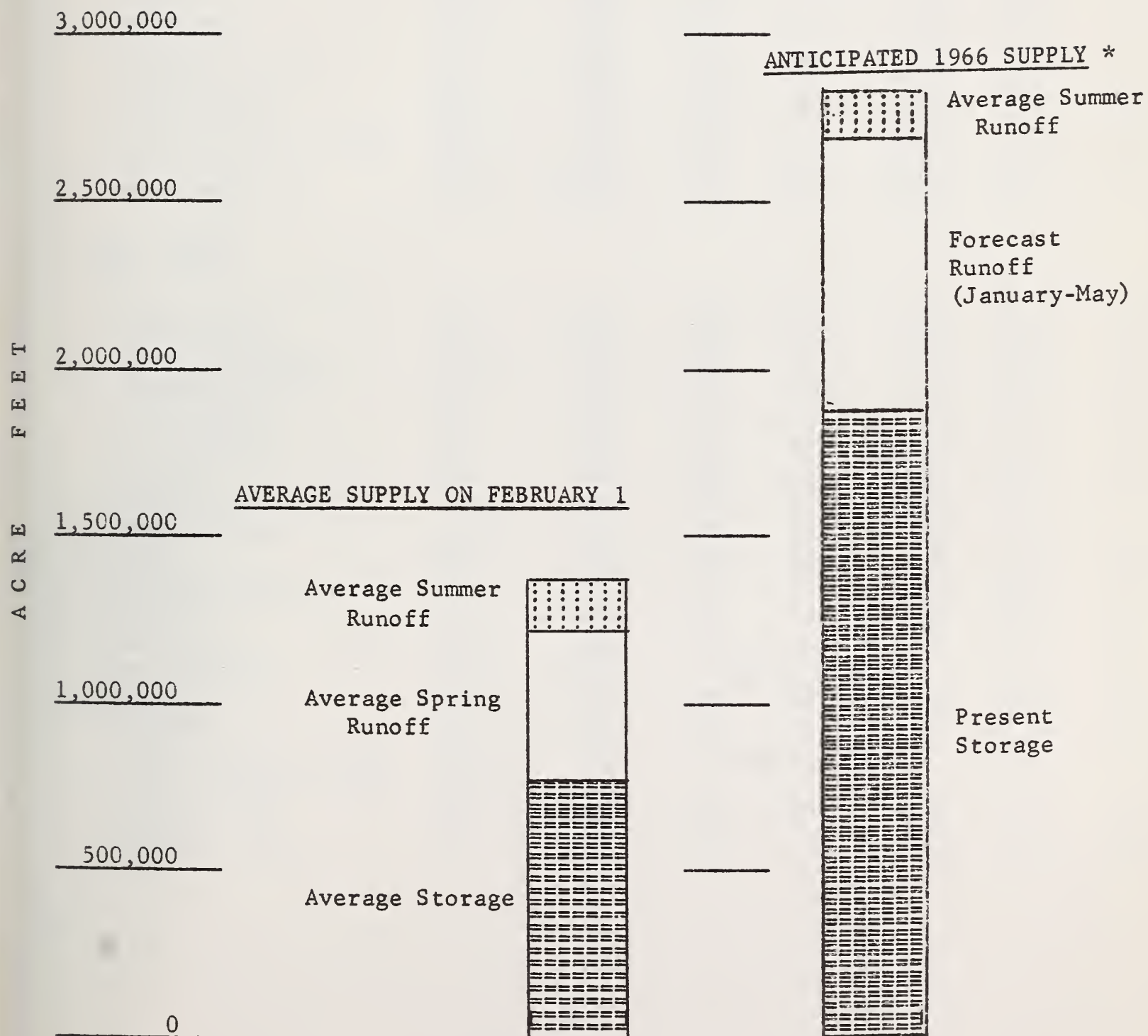
BASED ON SELECTED SNOW SURVEY COURSES

THE  
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ROYAL ANTHROPOLOGICAL INSTITUTE



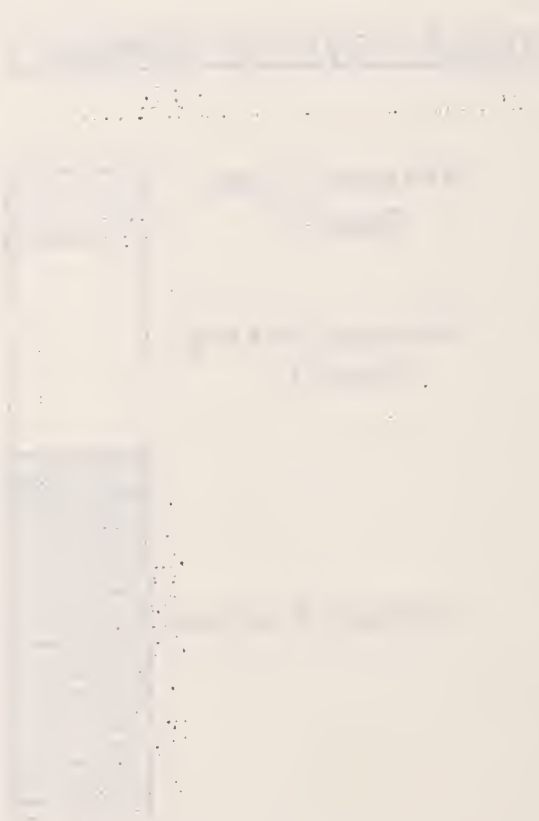


WATER SUPPLY INVENTORY  
SALT RIVER VALLEY SYSTEM  
FEBRUARY 1, 1966



\* Based on present Storage + Forecast Spring runoff + Average Summer runoff

1. *Adiantum*  
2. *Asplenium*  
3. *Polypodium*  
4. *Marattia*  
5. *Phlegmaria*  
6. *Phlegmaria*  
7. *Phlegmaria*  
8. *Phlegmaria*  
9. *Phlegmaria*  
10. *Phlegmaria*



## SNOW

ABOUT FEBRUARY 1, 1966

DRAINAGE BASIN and SNOW COURSE			CURRENT INFORMATION			PAST RECORD	
NAME	NO.	ELEVATION	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)	
						LAST YEAR	AVERAGE <sup>a</sup>

GILA RIVER

Bear Wallow	10T1	8100	1/31	45	14.4	1.2	3.8
Beaver Head	9S6	8000	1/29	28	6.9	2.4	3.2
Coronado Trail	9S7	8000	1/31	28	7.0	3.9	2.6
Frisco Divide	8S1-M	8000	1/31	23	5.5	2.1	2.3
Hannagan Meadows *	9S11	9090	1/28	45	14.6	9.1	---
Hummingbird #2 (A)	8S10-A	10400	1/31	64	16.1	10.1	---
Ice King	8S6	8020	1/31	31	7.9	4.8	---
Inman	7S2	7800	1/31	8	2.0	0.0	0.5
Mogollon	8S2	7000	1/31	17	3.6	0.8	1.5 **
Nutrioso	9S4	8500	1/31	20	5.3	2.8	2.1
Redstone Trail	8S7	8600	1/31	36	9.8	5.8	---
Rose Canyon	10T2	7300	1/31	34	9.2	0.6	2.3
Silver Creek Divide	8S8	9000	1/31	54	15.5	7.8	---
State Line	9S8	8000	1/31	26	6.5	2.2	2.5
Whitewater (A)	8S9-A	10500	1/31	84	20.2	10.6	---

SALT RIVER

Baldy *	9S1	9125	1/27	38	9.3	9.7	6.8 **
Beaver Head	9S6	8000	1/29	28	6.9	2.4	3.2
Canyon Creek #2	10R7-M	7500	1/28	18	5.9	2.9	3.1 **
Coronado Trail	9S7	8000	1/31	28	7.0	3.9	2.6
Forest Dale	10R6	6430	1/31	6	0.7	0.0	1.5
Ft. Apache *	9R5	9160	1/27	35	8.3	9.7	7.2 **
Gentry	10R5	7600	1/28	19	6.4	2.3	3.0 **
Hannagan Meadows	9S11	9090	1/28	45	14.6	9.1	---
Hawley Lake	9R10	8300	1/31	31	5.9	---	---
Heber	10R4	7600	1/28	19	5.8	3.0	3.2 **
Maverick Fork	9S2	9050	1/27	45	13.0	11.4	7.9 **
McNary	9R2-M	7200	1/31	15	3.2	0.0	2.4
Milk Ranch	9R1	7000	1/31	9	1.3	0.0	2.1
Mt. Ord (A)	9R9-A	11000	Report Delayed			---	---
Nutrioso *	9S4	8500	1/31	20	5.3	2.8	2.1
Pacheta	9S5	7800	1/31	34	7.6	1.2	3.8 **
Smith Cienega #1 (A)	9R7-A	9700	Report Delayed			---	---
Smith Cienega #2 (A)	9R8-A	9900	--	--	---	---	---
Wilson Lake	9R6	9000	1/27	35	8.1	---	---
Workman Creek	10S1	6900	1/26	23	7.3	2.8	4.4 **

(a) 1948-62, 15 year period. (\*) Adjacent drainage. (\*\*) 1948-62 Adjusted Average. (A) Aerial observation: Water content estimated.





## SNOW

ABOUT FEBRUARY 1, 1966

DRAINAGE BASIN and SNOW COURSE			CURRENT INFORMATION			PAST RECORD	
NAME	NO.	ELEVATION	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)	
						LAST YEAR	AVERAGE <sup>a</sup>

VERDE RIVER

Baker Butte	11R6	7300	1/25	33	10.1	---	---
Camp Wood	12R1	5700	1/27	4	1.5	0.0	1.3
Casner Park	11R2-M	6930	1/29	9	3.6	0.7	4.1 **
Chalender	12P1-M	7100	1/31	17	4.1	2.0	3.2
Copper Basin Divide	12R6	6720	1/31	11	3.1	0.0	---
Fort Valley	11P2	7350	1/31	14	3.1	0.5	2.6
Gaddes Canyon	12R4	7600	1/31	23	6.2	4.4	4.7 **
Happy Jack *	11R5	7630	1/31	18	5.7	2.6	3.7 **
Iron Springs *	12R2	6200	1/31	3	0.7	0.0	1.7
Mingus Mountain	12R3	7100	1/31	5	1.0	T	1.7
Mormon Lake *	11R4	7350	1/29	16	5.6	2.8	4.6
Mormon Mountain	11R3-M	7500	1/29	16	6.2	3.5	6.1 **
Munds Park	11R1-M	6500	1/29	6	1.1	0.4	3.1 **
Newman Park	11P5-M	6750	1/29	7	2.4	0.4	---
Snow Bowl #1	11P4	10260	1/29	31	10.0	---	---
Snow Bowl #2	11P6	11000	1/29	58	19.8	13.0	---
White Spar	12R5	6000	1/31	1	0.2	0.0	---

BILL WILLIAMS RIVER

Camp Wood *	12R1	5700	1/27	4	1.5	0.0	1.3
Copper Basin Divide	12R6	6720	1/31	11	3.1	0.0	---
Iron Springs	12R2	6200	1/31	3	0.7	0.0	1.7
Willow Ranch	13P1	5000	1/31	3	0.2	0.0	0.8

LOWER COLORADO RIVER

Bright Angel	12N1	8400	1/22	17	3.5	---	7.1 **
Chalender *	12P1-M	7100	1/31	17	4.1	2.0	3.2
Fort Valley	11P2	7350	1/31	14	3.1	0.5	2.6
Grand Canyon	11P1	7500	1/31	8	1.6	1.2	2.5

LITTLE COLORADO RIVER

Baldy	9S1	9125	1/27	38	9.3	9.7	6.8 **
Canyon Creek #2	10R7-M	7500	1/28	18	5.9	2.9	3.1 **
Forest Dale	10R6	6430	1/31	6	0.7	0.0	1.5
Ft. Apache	9R5	9160	1/27	35	8.3	9.7	7.2 **
Fort Valley	11P2	7350	1/31	14	3.1	0.5	2.6
Gentry	10R5	7600	1/28	19	6.4	2.3	3.0 **
Happy Jack *	11R5	7630	1/31	18	5.7	2.6	3.7 **
Heber	10R4	7600	1/28	19	5.8	3.0	3.2 **
McNary	9R2-M	7200	1/31	15	3.2	0.0	2.4
Mormon Lake	11R4	7350	1/29	16	5.6	2.8	4.6
Mormon Mountain	11R3-M	7500	1/29	16	6.2	3.5	6.1 **
Nutriosio	9S4	8500	1/31	20	5.3	2.8	2.1
Snow Bowl #1	11P4	10260	1/29	31	10.0	---	---
Snow Bowl #2	11P6	11000	1/29	58	19.8	13.0	---
Wilson Lake *	9R6	9000	1/27	35	8.1	---	---

(a) 1948-62, 15 year period. (\*) Adjacent drainage. (\*\*) 1948-62 Adjusted Average. (A) Aerial observation: Water content estimated.



# PRECIPITATION

## STORAGE GAGE DATA - ABOUT FEBRUARY 1, 1966

Drainage Basin and Storage Gage	Elev.	Current Data		1948-62	From Approx. 11/1 to Date		
		Date of Reading	January Precip.	Av. Jan. Precip.	This Year	1948-62 Average	% of Average
<u>GILA RIVER</u>							
Silver Creek Divide	9000	1/31	1.60#	---	21.09	---	---
Hannagan Meadows	9030	1/28	1.38#	3.30*	15.48	8.51*	182
<u>SALT RIVER</u>							
Hannagan Meadows	9030	1/28	1.38#	3.30*	15.48	8.51*	182
Little Wildcat (Heber Snow Course)	7600	1/28	1.60#	4.06*	18.22	8.22*	222
Maverick Fork	9050	1/27	1.67#	2.83*	16.45	6.87*	239
Workman Creek **	6970	1/26	1.75	4.62	26.49	10.70	248
<u>VERDE RIVER</u>							
Baker Butte	7300	--	---	---	---	---	---
Copper Basin Divide	6720	1/31	1.08#	---	16.84	---	---
Fort Valley **	7350	1/31	.90	2.45	10.64	5.30	201
Happy Jack **	7480	1/31	1.33	3.41*	14.68	7.10*	207
Mingus Mountain	7660	1/31	1.75#	2.99	13.43	5.89	228
Mormon Mountain	7500	1/29	1.22#	---	19.82	---	---
<u>LITTLE COLORADO RIVER</u>							
Sheep Crossing (Baldy Snow Course)	9125	1/27	1.69#	2.61*	13.82	6.23*	222
Little Wildcat (Heber Snow Course)	7600	1/28	1.60#	4.06*	18.22	8.22*	222

\*\* Data supplied by U. S. Forest Service

\* 1948-62 Adjusted Average

# Partially Estimated

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P. Q. R.		5455		1981		32	
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V. W. X.		5859		1983		34	
Y. Z. A.		6061		1984		35	
B. C. D.		6263		1985		36	
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K. L. M.		6869		1988		39	
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T. U. V.		7475		1991		42	
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ARIZONA SOIL MOISTURE - ABOUT FEBRUARY 1, 1966

Drainage Basin and Station	<u>1/</u> Station Number	Elev.	<u>Soil Profile in Inches</u>		Date	<u>Soil Moisture Content in Inches</u>			
			Depth	Cap.		1966	<u>Past Record</u>		Avg.
							1965	1964	
<u>GILA RIVER</u>									
Frisco Divide	8S1-M	8000	48	13.3	1/31	9.9	9.8	6.8	10.4
<u>SALT RIVER</u>									
Black River Divide	9S10-*	9100	48	16.8	1/14	16.6	17.8	15.3	14.8
Canyon Creek #2	10R7-M	7500	48	18.3	1/13	18.2	14.9	14.4	14.1
Corduoy Creek	10R8-*	6000	48	16.0	1/30	15.5	12.1	6.4	8.2
McNary	9R2-M	7200	48	16.3	1/30	17.9	15.5	13.3	14.2
<u>VERDE RIVER</u>									
Casner Park	11R2-M	6930	48	19.1	1/29	20.8	20.8	12.1	13.9
Mormon Mountain	11R3-M	7500	48	16.1	1/29	17.7	17.8	13.7	14.1

1/ \*-Soil Moisture Station only  
M-Snow Course and Soil Moisture Station

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# LIST OF SNOW SURVEYORS

## SNOW COURSE

## SURVEYOR

Baker Butte -----	SCS and SRVWUA
Baldy -----	SCS and SRVWUA
Bear Wallow -----	Forest Service - Allan Hinds
Beaver Head -----	N. A. Josh
Bright Angel -----	National Park Service - Bob Peterson
Camp Wood -----	Lyn Pehl
Canyon Creek #2 -----	SCS and SRVWUA
Casner Park -----	SCS and SRVWUA
Chalender -----	Forest Service - Mel Richards
Copper Basin Divide -----	SCS - Bill Gray
Coronado Trail -----	Forest Service - Curtis Connolly
Forest Dale -----	Bureau of Indian Affairs - Raymond Endfield
Ft. Apache -----	SCS and SRVWUA
Fort Valley -----	Rocky Mountain Forest & Range Exp. Station
Frisco Divide -----	Forest Service - Joe Clayton
Gaddes Canyon -----	Paul G. Lidbeck
Gentry -----	SCS and SRVWUA
Grand Canyon -----	National Park Service - Larry Hakel
Hannagan Meadows -----	N. A. Josh
Happy Jack -----	Emil O. Ryberg
Hawley Lake -----	Bureau of Indian Affairs - Raymond Endfield
Heber -----	SCS and SRVWUA
Hummingbird #2 -----	Ray Freeman
Ice King -----	James R. Wray
Inman -----	C. H. McCauley
Iron Springs -----	SCS - Bill Gray
Maverick Fork -----	SCS and SRVWUA
McNary -----	Bureau of Indian Affairs - Raymond Endfield
Milk Ranch -----	Bureau of Indian Affairs - Raymond Endfield
Mingus Mountain -----	Paul G. Lidbeck
Mogollon -----	James R. Wray
Mormon Lake -----	SCS and SRVWUA
Mormon Mountain -----	SCS and SRVWUA
Mt. Ord -----	Jim Sparks
Munds Park -----	SCS and SRVWUA
Newman Park -----	SCS and SRVWUA
Nutriosso -----	Forest Service - Curtis Connolly
Pacheta -----	Foch Phillips
Redstone Trail -----	James R. Wray
Rose Canyon -----	Forest Service - Allan Hinds
Silver Creek Divide -----	James R. Wray
Smith Cienega #1 -----	Jim Sparks
Smith Cienega #2 -----	Jim Sparks
Snow Bowl #1 -----	Forest Service - Richard Nielsen
Snow Bowl #2 -----	Forest Service - Richard Nielsen
State Line -----	Forest Service - Joe Clayton
White Spar -----	SCS - Bill Gray
Whitewater -----	Ray Freeman
Willow Ranch -----	Tiny Miller
Wilson Lake -----	SCS and SRVWUA
Workman Creek -----	Rocky Mountain Forest & Range Exp. Station





# The Following Organizations Cooperate in the Arizona Snow Survey Work

## FEDERAL

Department of Agriculture

Soil Conservation Service

Forest Service

Apache Forest

Coconino Forest

Coronado Forest

Gila Forest

Kaibab Forest

Prescott Forest

Rocky Mountain Forest and Range Experiment Station

Tonto Forest

Department of Commerce

Weather Bureau

Arizona Section

Department of Interior

Bureau of Reclamation

Region III

Geological Survey

Arizona District

Bureau of Indian Affairs

Fort Apache Reservation

San Carlos Irrigation Project

National Park Service

Grand Canyon National Park

Gila Water Commissioner

Safford, Arizona

## STATE

Arizona Agricultural Experiment Station

## IRRIGATION PROJECTS

Salt River Valley Water Users' Association

Phoenix, Arizona

San Carlos Irrigation and Drainage District

Coolidge, Arizona

## PRIVATE

Southwest Forest Industries, Inc.

McNary, Arizona

Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.

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CURRENT SERIAL RECORDS

**WATER SUPPLY OUTLOOK**  
and  
**FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS**  
for  
**ARIZONA**

UNITED STATES DEPARTMENT of AGRICULTURE...SOIL CONSERVATION SERVICE,  
SALT RIVER VALLEY WATER USERS ASSOCIATION  
and  
ARIZONA AGRICULTURAL EXPERIMENT STATION

Data included in this report were obtained by the agencies  
named above in cooperation with the Federal, State and pri-  
vate organizations listed on the last page of this report.

||||||| AS OF |||||  
**FEB. 15, 1966**



# UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

## To Recipients of Water Supply Outlook Reports:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season as they affect runoff will add to be an effective average. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1400 snow courses in Western United States and in the Columbia Basin in British Columbia. In the near future, it is anticipated that automatic snow water equivalent sensing devices along with radio telemetry will provide a continuous record of snow water equivalent at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

Listed below are water supply outlook reports based on Federal-State-Private Cooperative snow surveys. Those published by the Soil Conservation Service may be obtained from Soil Conservation Service, Room 507, Federal Building, 701 N. W. Glisan, Portland, Oregon 97209.

### PUBLISHED BY SOIL CONSERVATION SERVICE

<u>REPORTS</u>	<u>ISSUED</u>	<u>LOCATION</u>	<u>COOPERATING WITH</u>
RIVER BASINS			
WESTERN UNITED STATES	MONTHLY (FEB.-MAY)	PORTLAND, OREGON	ALL COOPERATORS
BASIC DATA SUMMARY	OCTOBER 1	PORTLAND, OREGON	ALL COOPERATORS
STATES			
ALASKA	MONTHLY (MAR.-MAY)	PALMER, ALASKA	ALASKA S.C.D.
ARIZONA	SEMI-MONTHLY (JAN. 15 - APR. 1)	PHOENIX, ARIZONA	SALT R. VALLEY WATER USERS ASSOC. ARIZ. AGR. EXP. STATION
COLORADO AND NEW MEXICO	MONTHLY (FEB.-MAY)	FORT COLLINS, COLORADO	COLO. STATE UNIVERSITY COLO. STATE ENGINEER N. MEX. STATE ENGINEER
IDAHO	MONTHLY (JAN.-JUNE)	BOISE, IDAHO	IDAHO STATE RECLAMATION ENGINEER
MONTANA	MONTHLY (JAN.-JUNE)	BOZEMAN, MONTANA	MONT. AGR. EXP. STATION
NEVADA	MONTHLY (JAN.-MAY)	RENO, NEVADA	NEVADA DEPT. OF CONSERVATION AND NATURAL RESOURCES - DIVISION OF WATER RESOURCES
OREGON	MONTHLY (JAN.-JUNE)	PORTLAND, OREGON	OREG. STATE UNIVERSITY OREGON STATE ENGINEER
UTAH	MONTHLY (JAN.-JUNE)	SALT LAKE CITY, UTAH	UTAH STATE ENGINEER
WASHINGTON	MONTHLY (FEB.-JUNE)	SPOKANE, WASHINGTON	WN. STATE DEPT. OF CONSERVATION
WYOMING	MONTHLY (FEB.-JUNE)	CASPER, WYOMING	WYOMING STATE ENGINEER

### PUBLISHED BY OTHER AGENCIES

<u>REPORTS</u>	<u>ISSUED</u>	<u>AGENCY</u>
BRITISH COLUMBIA	MONTHLY (FEB.-JUNE)	WATER RESOURCES SERVICE, DEPT. OF LANDS, FOREST AND WATER RESOURCES, PARLIAMENT BLDG., VICTORIA, B.C., CANADA
CALIFORNIA	MONTHLY (FEB.-MAY)	CALIF. DEPT. OF WATER RESOURCES, P.O. BOX 388, SACRAMENTO, CALIF.



**WATER SUPPLY OUTLOOK**  
and  
**FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS**  
for  
**ARIZONA**

(Salt, Verde, Gila and Part of Lower Colorado River Basin)

*Report prepared by*

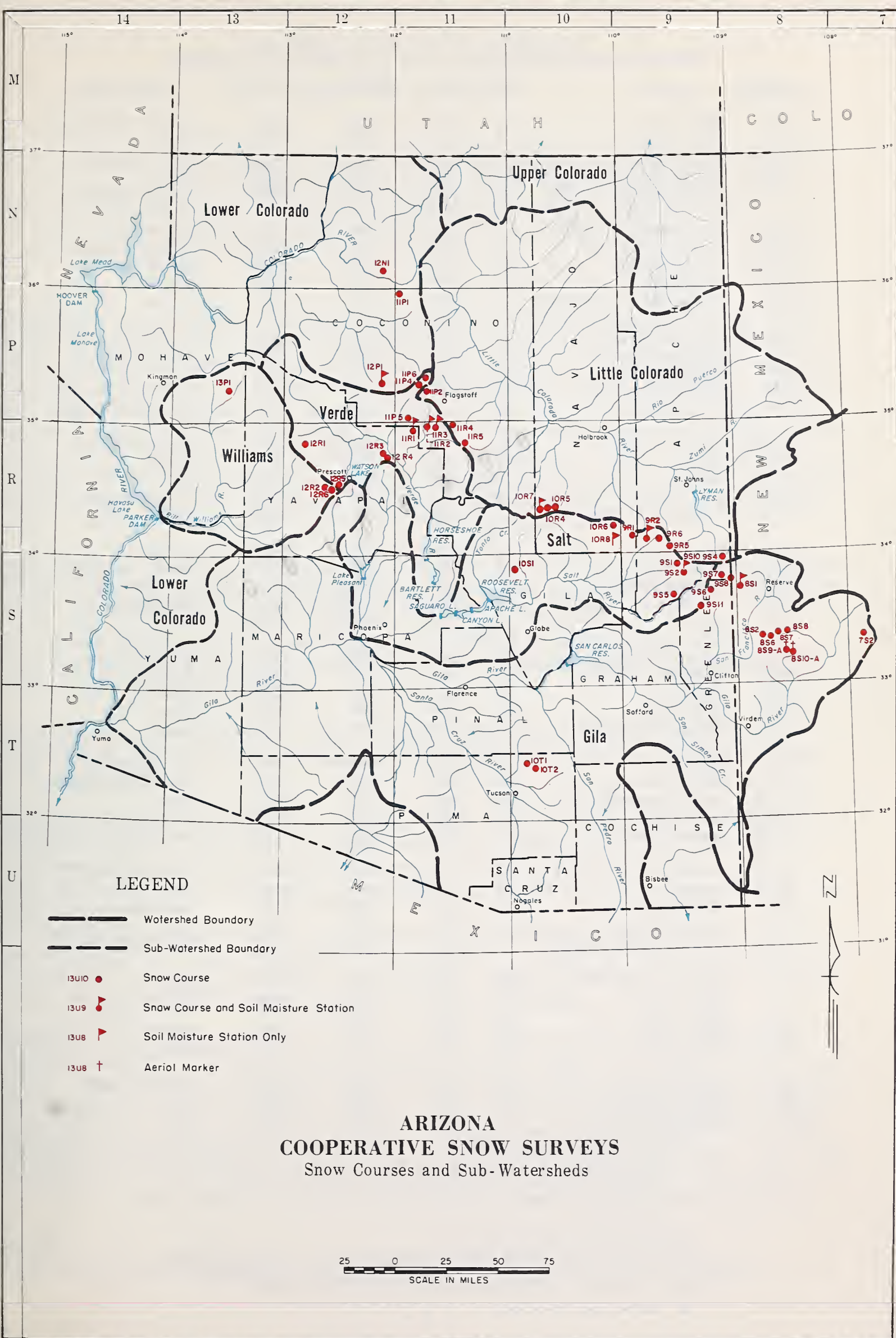
RICHARD W. ENZ...SNOW SURVEY SUPERVISOR  
SOIL CONSERVATION SERVICE  
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*Issued by*

MERRITT D. BURDICK  
STATE CONSERVATIONIST  
SOIL CONSERVATION SERVICE

VICTOR I. CORBELL  
PRESIDENT ,  
SALT RIVER VALLEY WATER USERS ASSOCIATION







# INDEX to SNOW COURSES and SOIL MOISTURE STATIONS

Number**	Name	Sec	Twp	Rge***	Elevation	River Basin
9S1	Baldy (p)	28	7N	27E	9125	Little Colorado
10T1	Bear Wallow	6	12S	16E	8100	Gila
9S6	Beaver Head	13	4N	30E	8000	San Francisco
9S10-*	Black River Divide	10	6N	27E	9400	Salt
12N1	Bright Angel	34	33N	3E	8400	Lower Colorado
12R1	Camp Wood	3	16N	6W	5700	Verde
10R7-M	Canyon Creek #2	18	11N	15E	7500	Little Colorado
11R2-M	Casner Park	19	18N	8E	6930	Verde
12P1-M	Chalender	27	22N	3E	7100	Verde
12R6	Copper Basin Divide (p)	23	13N	3W	6720	Verde
10R8 -*	Corduroy Creek	4	8N	21E	6000	Salt
9S7	Coronado Trail	26	5N	30E	8000	San Francisco
10R6	Forest Dale	2	9N	21E	6430	Salt
11P2	Fort Valley (p)	22	22N	6E	7350	Little Colorado
9R5	Ft. Apache	18	7N	27E	9160	Little Colorado
8S1-M	Frisco Divide	31	6S	20W****	8000	San Francisco
12R4	Gaddes Canyon	11	15N	2E	7600	Verde
10R5	Gentry	36	11N	15E	7650	Salt
11P1	Grand Canyon	21	30N	4E	7500	Lower Colorado
9S11	Hannagan Meadows (p)	19	3N	29E	9090	Salt
11R5	Happy Jack	30	17N	9E	7630	Verde
10R4	Heber (p)	28	11N	15E	7600	Little Colorado
8S9-A	Hummingbird	19	11S	17E	10550	San Francisco
8S6	Ice King	6	11S	18W****	8020	San Francisco
7S2	Inman	6	11S	10W****	7800	Gila
12R2	Iron Springs	22	14N	3W	6200	Bill Williams
9S2	Maverick Fork (p)	13	6N	27E	9150	Salt
9R2-M	McNary	23	8N	23E	7200	Salt
9R1	Milk Ranch	33	8N	23E	7000	Salt
12R3	Mingus Mountain	3	15N	2E	7100	Verde
8S2	Mogollon	2	11S	19W****	7000	San Francisco
11R4	Mormon Lake	13	18N	8E	7350	Little Colorado
11R3-M	Mormon Mountain (p)	14	18N	8E	7500	Verde
11R1-M	Munds Park	7	18N	7E	6500	Verde
11P5-M	Newman Park	25	19N	6E	6750	Verde
9S4	Nutriso	23	6N	30E	8500	San Francisco
9S5	Pacheta	27	4-1/2N	27E	7800	Salt
8S7	Redstone Trail	5	11S	18W****	8600	San Francisco
10T2	Rose Canyon	15	12S	16E	7300	Gila
8S8	Silver Creek Divide	4	11S	18W****	9000	San Francisco
11P4	Snow Bowl #1 (p)	36	23N	6E	10260	Verde
11P6	Snow Bowl #2	31	23N	7E	11000	Verde
9S8	State Line	6	6S	21W****	8000	San Francisco
12R5	White Spar	19	13N	2W	6000	Verde
8S10-A	Whitewater	19	11S	17E	10750	Gila
13P1	Willow Ranch	16	21N	11W	5000	Bill Williams
9R6	Wilson Lake	4	7N	26E	9000	Salt
10S1	Workman Creek	33	6N	14E	6900	Salt

\* SOIL MOISTURE STATION ONLY

\*\* NUMBER INDICATES LOCATION OF SNOW COURSE WITHIN COORDINATE RECTANGLE, THUS 9N1 IS COURSE #1 IN COORDINATE RECTANGLE 9N.

\*\*\* ALL IN GILA AND SALT RIVER BASE AND MERIDIAN EXCEPT WHERE OTHERWISE INDICATED.

\*\*\*\* NEW MEXICO PRINCIPAL MERIDIAN

M SOIL MOISTURE STATION INSTALLED ON OR IN VICINITY OF SNOW COURSE.

(p) STORAGE GAGE INSTALLED ON OR IN VICINITY OF SNOW COURSE.

A AERIAL SNOW DEPTH GAGE



# ARIZONA WATER SUPPLY OUTLOOK

FEBRUARY 15, 1966

\* \* \* \* \*  
\* The Water Supply Outlook for Arizona remains Excellent. \*  
\* Reservoir Storage is the highest since 1941. Snow Cover \*  
\* is very high on the Gila and Salt Watersheds with Spring \*  
\* runoff expected to be between 190% and 240% of Average. \*  
\* \* \* \* \*

SNOW COVER: Snow cover is 3 times average on the Gila Watershed where some stations reported all time record amounts. Silver Creek Divide, Hannagan Meadows, and Mt. Lemmon all have about 65" of snow containing 17-20" of water. The Salt River Project flying over their watershed observed 109" of snow at the 11,000 foot aerial snow depth marker on Mt. Ord in the White Mts. The water content there is estimated to be 33". The snow pack on the Salt River Watershed is 195% of average while on the Verde it is 138%. The storm of last week deposited heavy snow in the southern and eastern parts of the state, but snow accumulations on the Verde Watershed were moderate. Cool temperatures since January 1, have resulted in little melting of snow.

PRECIPITATION: January precipitation was much below average on the major watersheds. The first half of February has been about average on the Verde Watershed, but above average on the Salt and Gila Watersheds.

Mt. Lemmon reported 51" of snowfall or 5.05" of precipitation last week. This heavy storm extended eastward into the southern part of the White Mts. and on into the Mogollon Mts.

SOIL MOISTURE: The storm of last week has offset any drying that may have occurred at the lower elevations of the watersheds. Soil moisture is very high everywhere.

RESERVOIR STORAGE: Storage in the Salt River Project Reservoirs is being maintained at 90% of capacity for flood control. About 1,000 cfs is being released with most of this being used to supply irrigation needs. As flow into the reservoirs increases, however, more water will be released down the river.

San Carlos Reservoir presently containing 394,000 acre feet should receive an additional 200,000 acre feet this spring. Storage in Sal Carlos Reservoir is now 558% of average or 1/3 of capacity. Lyman Reservoir is 2/3 full and is predicted to spill about 10,000 acre feet starting in late April.

STREAMFLOW AND WATER SUPPLY: During the first half of February streamflow varied from 60% of average on the Verde River to 180% of average on the Gila River. The Salt River flowed just a little above average. Cold temperatures are responsible for these low flows. A total of 780,000 acre feet is forecast for the combined flow of the Salt, Verde, and Tonto streams during the February through May period. This is 176% of the 1948-62 average. The Gila at the Head of the Safford Valley is forecast to flow 242,000 acre feet, or 247% of average. The Gila River should hold above 100 cfs until mid July.

Surface water supplies will be abundant in all areas of Arizona. Early and heavy irrigation is encouraged to minimize waste of water.



# STREAM FLOW FORECASTS - FEBRUARY 15, 1966

The following summarized runoff forecasts are based principally on mountain snow cover and on the assumption that precipitation and temperature will be near average from the present time to the end of the forecast period. Appreciable deviations from normal of temperature and/or precipitation will correspondingly modify these forecasts.

SUB-WATERSHED, STREAM and STATION	SEASONAL STREAM FLOW IN THOUSANDS OF ACRE FEET					
	FORECAST PERIOD: FEBRUARY - MAY, INCLUSIVE					
	Forecast Runoff 1966	Percent 15-Year Average	Measured Runoff			1948-62 Average
			1965	1963	1962	
Salt River near Roosevelt	465	179	474.2	102.7	191.4	259.1
Tonto Creek near Roosevelt	65	196	94.8	10.5	8.7	33.2
Verde River above Horseshoe	250	165	417.9	103.0	43.8	151.1
Gila River near Gila	93	213	39.9	15.4	44.6	43.7
Gila River near Virden	120	235	45.1	14.8	55.6	51.0
Gila River near Solomon	242	247	91.6	25.4	104.3	98.0
Frisco River at Clifton	125	252	48.7	13.1	45.7	49.6
Frisco River near Glenwood	55	263	20.6	3.5	11.7	20.9
Little Colorado River above Lyman Dam (FEB. -JUNE, Incl.)	22	237	19.9	5.1	2.6	9.3
<hr/>						
(Month of March						
Gila River near Solomon	95	245	30.2	6.6	22.1	38.7
Gila River nr.Solomon						
Minimum possible	35					

The Gila River near Solomon is predicted to flow above 100 cfs until July 15.

Granite Creek is forecast to flow 2200 Acre Feet this spring, spilling  
Watson and Willow Lakes.







STATUS OF ARIZONA RESERVOIR STORAGE - ABOUT FEBRUARY 15, 1966

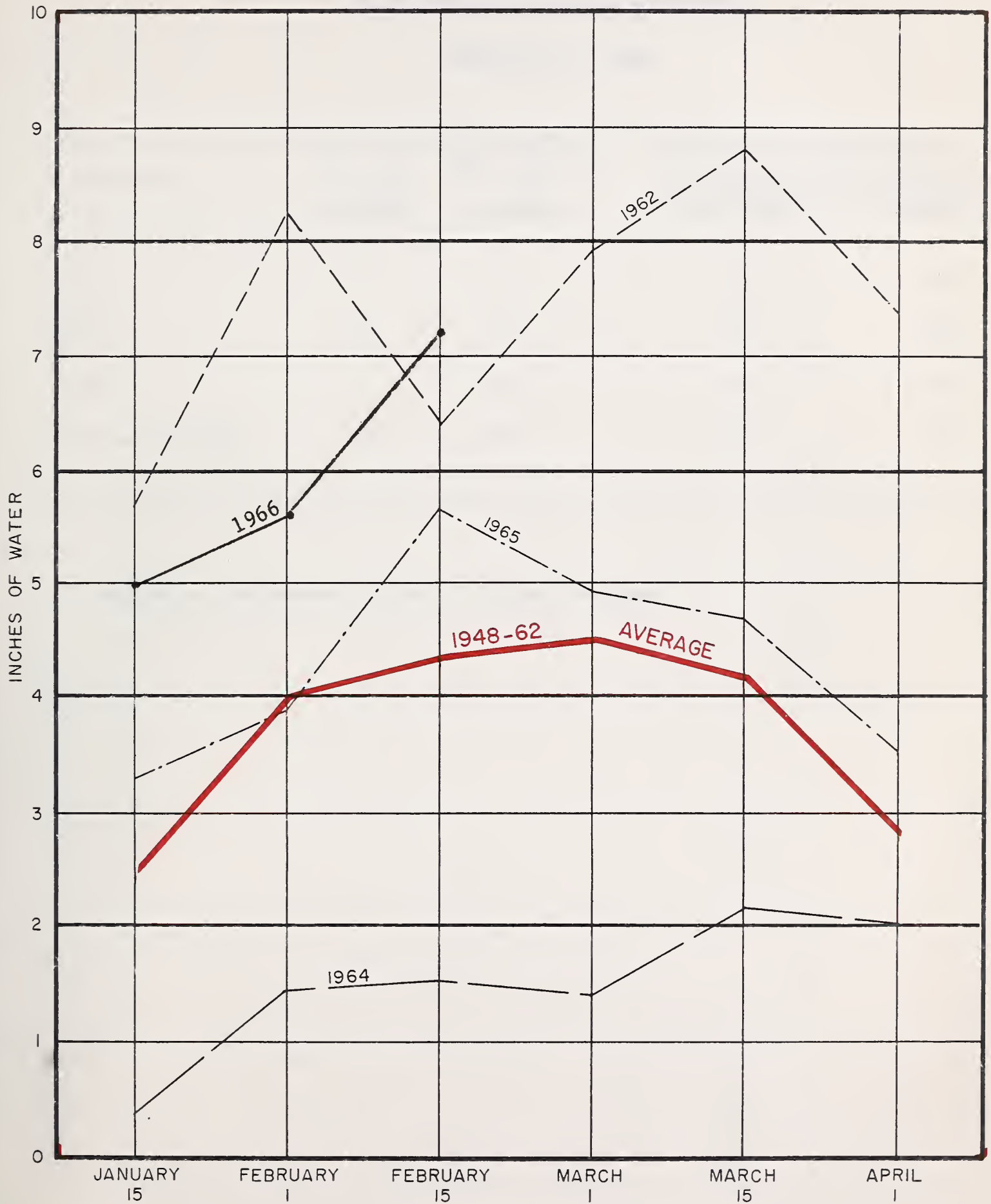
SUB- WATERSHED and/or STREAM	RESERVOIR	USABLE CAPACITY 1000's ACRE FT.	USABLE STORAGE - 1000's ACRE FEET			
			1966	1965	1964	15-Year Average 1948-62
<u>GILA RIVER DRAINAGE</u>						
Agua Fria	Lake Pleasant	157.6	157.6	25.6	13.2	30.1
Granite	Watson Lake	4.7	4.5	3.0	3.9	---
Gila	San Carlos	1,206.0	393.6	67.5	66.1	70.5
Verde	Bartlett	179.5	166.9	116.1	14.3	75.1
Verde	Horseshoe	142.8	108.2	12.6	1.6	19.1
Salt	Roosevelt	1,382.0	1,252.2	429.5	436.0	420.1
Salt	Apache	245.0	239.4	234.6	235.0	200.3
Salt	Canyon	58.0	55.2	44.4	50.9	46.7
Salt	Saguaro	70.0	50.1	64.2	66.8	49.8
<u>COLORADO RIVER DRAINAGE</u>						
Colorado	Lake Havasu	619.4	543.6	541.3	529.6	544.8
Colorado	Lake Mohave	1,810.0	1,708.4	1,741.0	1,670.0	1,546.0*
Colorado	Lake Mead	27,207.0	15,663.3	11,299.0	15,289.0	17,213.8
Colorado	Lake Powell	25,002.0	8,734.9	6,195.2	3,107.0	---
Little Colo.	Lyman	30.6	20.4	10.2	10.2	7.1
Little Colo.	Show Low Lake	5.1	5.1	2.8	0.8	1.4

\* Average is for less than 15 years of record in the 1948-62 period.



# RELATIVE SNOW WATER ACCUMULATION ARIZONA

FEBRUARY 15, 1966



*This graph represents the average snow water content on eleven selected snow courses on Arizona Sub-Watersheds.*

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION PUBLISHED WEEKLY CHICAGO, ILL., U.S.A.





SNOW COVER ON ARIZONA WATERSHEDS

FEBRUARY 15, 1966

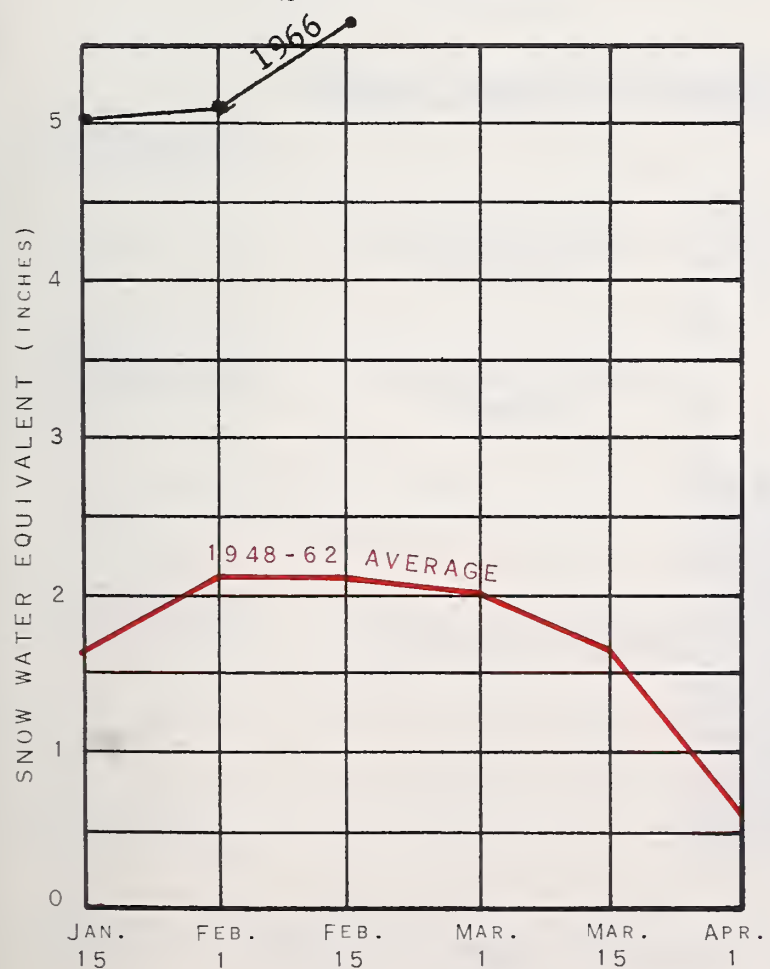
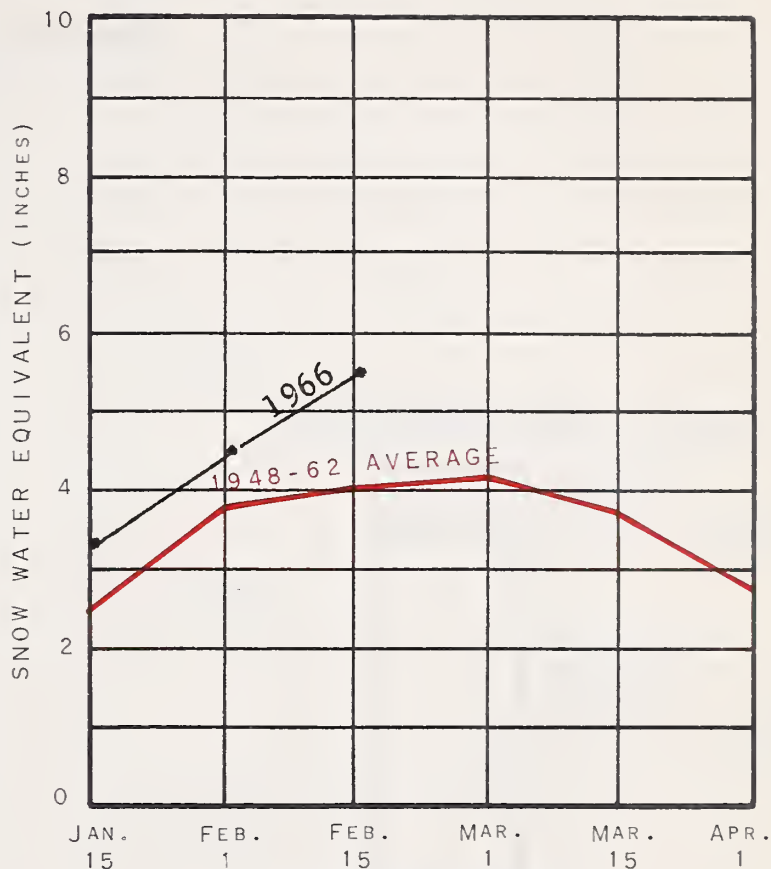
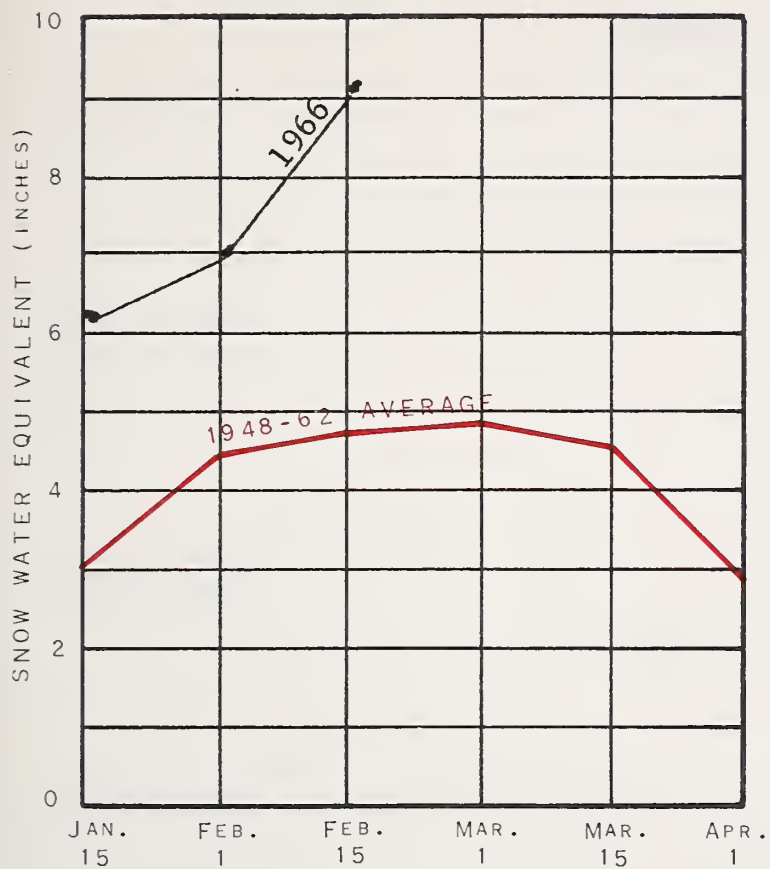
Watershed	No. of Courses Average	Water Content of Snow (Inches)	This Year's Water Content of Snow Expressed as Percent of:	
			Last Year	Average *
Gila	7	6.3	192	300
Salt	10	9.1	174	195
Verde	7	5.5	126	138
Little Colorado	4	8.6	115	170

\* Actual or Estimated 1948-62, 15-year Average

$\frac{1}{2} \left( \frac{\partial^2}{\partial x^2} + \frac{\partial^2}{\partial y^2} \right) u = -f(x, y)$

1966

# ARIZONA SNOW COVER BY WATERSHEDS



BASED ON SELECTED SNOW SURVEY COURSES

# The Journal of the American Mathematical Society



Figure 1



Figure 2



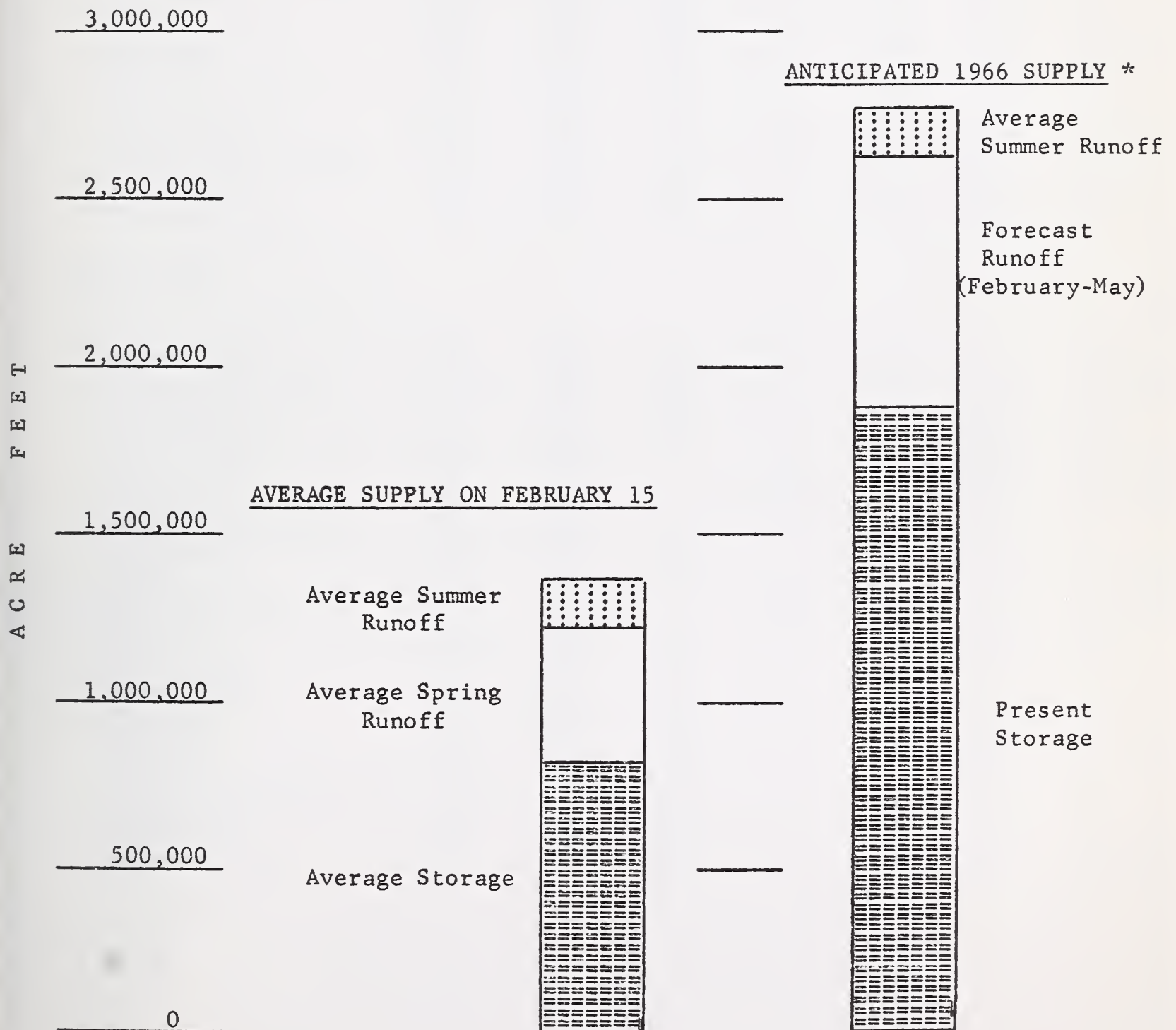
Figure 3



Figure 4



WATER SUPPLY INVENTORY  
SALT RIVER VALLEY SYSTEM  
FEBRUARY 15, 1966



\* Based on present Storage + Forecast Spring runoff + Average Summer runoff.

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## SNOW

ABOUT FEBRUARY 15, 1966

DRAINAGE BASIN and SNOW COURSE			CURRENT INFORMATION			PAST RECORD	
NAME	NO.	ELEVATION	DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)	
						LAST YEAR	AVERAGE <sup>a</sup>

GILA RIVER

Bear Wallow	10T1	8100	2/14	67	19.6	4.6	3.2
Beaver Head	9S6	8000	2/13	37	9.3	3.1	3.0
Coronado Trail	9S7	8000	2/14	33	8.8	5.4	2.7
Frisco Divide	8S1-M	8000	2/14	29	6.6	3.5	2.1
Hannagan Meadows *	9S11	9090	2/13	63	17.0	12.8	---
Hummingbird #2 (A)	8S10-A	10400	2/14	90	22.0	14.9	---
Ice King	8S6	8020	2/14	40	9.4	6.8	---
Inman	7S2	7800	2/14	5	1.1	2.1	0.5
Mogollon	8S2	7000	2/14	20	5.5	1.6	2.0 **
Nutriso	9S4	8500	2/14	23	6.1	3.8	2.0
Redstone Trail	8S7	8600	2/14	44	10.5	7.1	---
Rose Canyon	10T2	7300	2/14	53	13.6	3.6	1.9
Silver Creek Divide	8S8	9000	2/14	65	19.5	11.7	---
State Line	9S8	8000	2/14	33	6.4	3.3	2.3
Whitewater (A)	8S9-A	10500	2/14	106	26.0	17.0	---

SALT RIVER

Baldy *	9S1	9125	-	42#	11.8#	11.1	7.7 **
Beaver Head	9S6	8000	2/13	37	9.3	3.1	3.0
Canyon Creek #2	10R7-M	7500	2/14	23	6.3	3.8	3.1 **
Coronado Trail	9S7	8000	2/14	33	8.8	5.4	2.7
Forest Dale	10R6	6430	2/14	10	2.1	2.3	1.3
Ft. Apache	9R5	9160	-	44#	11.8#	10.8	8.1 **
Gentry	10R5	7600	No	Survey		3.2	3.3 **
Hannagan Meadows	9S11	9090	2/13	63	17.0	12.8	---
Hawley Lake	9R10	8300	2/14	32	8.0	---	---
Heber	10R4	7600	2/14	24	7.3	4.2	3.6 **
Maverick Fork	9S2	9050	-	48#	14.0#	---	9.3 **
McNary	9R2-M	7200	2/14	21	4.5	4.0	2.4
Milk Ranch	9R1	7000	2/14	14	3.5	3.3	1.7
Mt. Ord (A)	9R9-A	11000	2/14	109	33.0	---	---
Nutriso *	9S4	8500	2/14	23	6.1	3.8	2.0
Pacheta	9S5	7800	2/14	41	11.1	4.1	3.4 **
Smith Cienega #1 (A)	9R7-A	9700	2/14	77	25.0	---	---
Smith Cienega #2 (A)	9R8-A	9900	2/14	75	25.0	---	---
Wilson Lake	9R6	9000	2/14	44	11.8	---	---
Workman Creek	10S1	6900	2/10	34	8.8	6.1	4.6 **

(a) 1948-62, 15 year period. (\*) Adjacent drainage. (\*\*) 1948-62 Adjusted Average. (A) Aerial observation: Water content estimated.

# Estimated.

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# SNOW ABOUT FEBRUARY 15, 1965

DRAINAGE BASIN and SNOW COURSE			CURRENT INFORMATION			PAST RECORD	
			DATE OF SURVEY	SNOW DEPTH (Inches)	WATER CONTENT (Inches)	WATER CONTENT (Inches)	
NAME	NO.	ELEVATION				LAST YEAR	AVERAGE <sup>a</sup>

## VERDE RIVER

Baker Butte	11R6	7300	2/14	40	12.6	---	---
Camp Wood	12R1	5700	Report Delayed			1.2	0.9
Casner Park	11R2-M	6930	No Survey			3.7	4.1 **
Chalender	12P1-M	7100	2/14	21	5.0	3.7	3.4
Copper Basin Divide	12R6	6720	2/14	20	5.4	2.3	---
Fort Valley	11P2	7350	2/14	17	4.5	3.2	2.7
Gaddes Canyon	12R4	7600	2/14	33	8.0	7.0	5.0 **
Happy Jack *	11R5	7630	2/14	25	8.0	5.9	4.1 **
Iron Springs *	12R2	6200	2/14	7	1.3	1.1	1.3
Mingus Mountain	12R3	7100	2/14	11	2.8	2.3	1.3
Mormon Lake *	11R4	7350	2/14	22	5.5	4.2	4.8
Mormon Mountain	11R3-M	7500	2/12	25	6.0	5.4	6.5 **
Munds Park	11R1-M	6500	No Survey			2.7	2.3 **
Newman Park	11P5-M	6750	2/11	20	3.6	2.8	---
Snow Bowl #1	11P4	10260	Report Delayed			11.2	---
Snow Bowl #2	11P6	11000	Report Delayed			21.8	---
White Spar	12R5	6000	2/14	8	1.4	1.5	---

## BILL WILLIAMS RIVER

Camp Wood *	12R1	5700	Report Delayed			1.2	0.9
Copper Basin Divide	12R6	6720	2/14	20	5.4	2.3	---
Iron Springs	12R2	6200	2/14	7	1.3	1.1	1.3
Willow Ranch	13P1	5000	2/14	0	0.0	0.0	0.4

## LOWER COLORADO RIVER

Bright Angel	12N1	8400	No Survey			6.3	7.8 **
Chalender *	12P1-M	7100	2/14	21	5.0	3.7	3.4
Fort Valley	11P2	7350	2/14	17	4.5	3.2	2.7
Grand Canyon	11P1	7500	2/14	14	3.2	1.6	2.5

## LITTLE COLORADO RIVER

Baldy	9S1	9125	--	42#	11.8#	11.1	7.7 **
Canyon Creek #2	10R7-M	7500	2/14	23	6.3	3.8	3.1 **
Forest Dale	10R6	6430	2/14	10	2.1	2.3	1.3
Ft. Apache	9R5	9160	--	44#	11.8#	10.8	8.1 **
Fort Valley	11P2	7350	2/14	17	4.5	3.2	2.7
Gentry	10R5	7600	No Survey			3.2	3.3 **
Happy Jack *	11R5	7630	2/14	25	8.0	5.9	4.1 **
Heber	10R4	7600	2/14	24	7.3	4.2	3.6 **
McNary	9R2-M	7200	2/14	21	4.5	4.0	2.4
Mormon Lake	11R4	7350	2/14	22	5.5	4.2	4.8
Mormon Mountain	11R3	7500	2/12	25	6.0	5.4	6.5 **
Nutriosio	9S4	8500	2/14	23	6.1	3.8	2.0
Snow Bowl #1	11P4	10260	Report Delayed			11.2	---
Snow Bowl #2	11P6	11000	Report Delayed			21.8	---
Wilson Lake *	9R6	9000	2/14	44	11.8	---	---

(a) 1948-62, 15 year period. (\*) Adjacent drainage. (\*\*) 1948-62 Adjusted Average. (A) Aerial observation: Water content estimated. # Estimated.

Date		Description		Amount		Balance	

PRECIPITATION AT SELECTED ARIZONA STATIONS <sup>1/</sup>

STATION	Precipitation (Inches)			
	January - 1966		Current Water-Year (Oct. 1965 - Jan. 1966)	
	Total	Departure from Average	Total	Departure from Average
Alpine	.73	- .87	7.47	+ 2.07
Ash Fork	.66	- .36	7.55	+ 3.93
Clifton	1.45	- .54	9.50	+ 6.13
Douglas Smelter	.85	+ .13	3.71	+ 1.22
Flagstaff WBAS *	1.10	- .73	12.97	+ 6.97
Payson Ranger Station	.77	-1.35	13.21	+ 6.34
Phoenix WBAS	.35	- .38	4.66	+ 2.13
Prescott	.39	-1.59	13.15	+ 7.10
Springerville	.47	- .24	2.51 <sup>#</sup>	+ .07
Tucson WBAS	1.74	+ .92	7.60	+ 4.60
Winslow WBAS	.68	+ .25	2.59	+ .62
Yuma WBAS	.41	+ .02	2.66	+ 1.45

# Corrected Value.

\* WBAS = Weather Bureau Airport Station

<sup>1/</sup> Data and Analysis furnished by Paul C. Kangieser,  
Arizona State Climatologist, U. S. Weather Bureau,  
Phoenix, Arizona.

Date		Description		Amount
1914	Jan 1	Balance		100.00
1914	Jan 15	Received from A. B.		50.00
1914	Feb 1	Received from C. D.		25.00
1914	Feb 15	Received from E. F.		75.00
1914	Mar 1	Received from G. H.		100.00
1914	Mar 15	Received from I. J.		50.00
1914	Apr 1	Received from K. L.		25.00
1914	Apr 15	Received from M. N.		75.00
1914	May 1	Received from O. P.		100.00
1914	May 15	Received from Q. R.		50.00
1914	Jun 1	Received from S. T.		25.00
1914	Jun 15	Received from U. V.		75.00
1914	Jul 1	Received from W. X.		100.00
1914	Jul 15	Received from Y. Z.		50.00
1914	Aug 1	Received from A. B.		25.00
1914	Aug 15	Received from C. D.		75.00
1914	Sep 1	Received from E. F.		100.00
1914	Sep 15	Received from G. H.		50.00
1914	Oct 1	Received from I. J.		25.00
1914	Oct 15	Received from K. L.		75.00
1914	Nov 1	Received from M. N.		100.00
1914	Nov 15	Received from O. P.		50.00
1914	Dec 1	Received from Q. R.		25.00
1914	Dec 15	Received from S. T.		75.00
1914	Dec 31	Balance		100.00

Prepared by: [Name]  
Checked by: [Name]  
Date: [Date]



# PRECIPITATION

## STORAGE GAGE DATA - ABOUT FEBRUARY 15, 1966

Drainage Basin and Storage Gage	Elev.	Current Data		1948-62	From Approx. 11/1 to Date		
		Date of Reading	Feb.1-15 Precip.	Av.Precip. Feb. 1-15	This Year	1948-62 Average	% of Average
<u>GILA RIVER</u>							
Silver Creek Divide	9000	2/14	3.05	--	24.14	--	--
Hannagan Meadows	9030	2/14	2.43	1.01*	17.91	9.52*	188
<u>SALT RIVER</u>							
Hannagan Meadows	9030	2/14	2.43	1.01*	17.91	9.52*	188
Little Wildcat	7600	2/14	1.60	1.38*	19.82	9.60*	206
(Heber Snow Course)							
Maverick Fork	9050	-	1.40 <sup>1/</sup>	1.17*	17.85 <sup>#</sup>	8.04*	222
Workman Creek **	6970	2/14	1.90	1.42	28.39	12.12	234
<u>VERDE RIVER</u>							
Baker Butte #2	7300	2/14	3.62	--	---	--	--
Copper Basin Divide	6720	2/14	2.43	--	19.27	--	--
Fort Valley **	7350	2/14	1.10	.93	11.74	6.23	188
Happy Jack **	7480	2/14	1.75	1.03*	16.43	8.13*	202
Mingus Mountain	7660	2/14	2.04	1.06	15.47	6.95	223
Mormon Mountain	7500	-	1.50 <sup>1/</sup>	--	21.32 <sup>#</sup>	--	--
<u>LITTLE COLORADO</u>							
Sheep Crossing	9125	-	1.30 <sup>1/</sup>	1.06*	15.12 <sup>#</sup>	7.29*	207
(Baldy Snow Course)							
Little Wildcat	7600	2/14	1.60	1.38*	19.82	9.60*	206
(Heber Snow Course)							

\*\* Data supplied by U. S. Forest Service

\* 1948-62 Adjusted Average

# Partially Estimated

<sup>1/</sup> Estimated



# LIST OF SNOW SURVEYORS

<u>SNOW COURSE</u>	<u>SURVEYOR</u>
Baker Butte -----	SCS and SRVWUA
Baldy -----	SCS and SRVWUA
Bear Wallow -----	Forest Service - Allan Hinds
Beaver Head -----	N. A. Josh
Bright Angel -----	National Park Service - Bob Peterson
Camp Wood -----	Lyn Pehl
Canyon Creek #2 -----	SCS and SRVWUA
Casner Park -----	SCS and SRVWUA
Chalender -----	Forest Service - Mel Richards
Copper Basin Divide -----	SCS - Bill Gray
Coronado Trail -----	Forest Service - Curtis Connolly
Forest Dale -----	Bureau of Indian Affairs - Raymond Endfield
Ft. Apache -----	SCS and SRVWUA
Fort Valley -----	Rocky Mountain Forest & Range Exp. Station
Frisco Divide -----	Forest Service - Joe Clayton
Gaddes Canyon -----	Paul G. Lidbeck
Gentry -----	SCS and SRVWUA
Grand Canyon -----	National Park Service - Larry Hakel
Hannagan Meadows -----	N. A. Josh
Happy Jack -----	Emil O. Ryberg
Hawley Lake -----	Bureau of Indian Affairs - Raymond Endfield
Heber -----	SCS and SRVWUA
Hummingbird #2 -----	Ray Freeman
Ice King -----	James R. Wray
Inman -----	C. H. McCauley
Iron Springs -----	SCS - Bill Gray
Maverick Fork -----	SCS and SRVWUA
McNary -----	Bureau of Indian Affairs - Raymond Endfield
Milk Ranch -----	Bureau of Indian Affairs - Raymond Endfield
Mingus Mountain -----	Paul G. Lidbeck
Mogollon -----	James R. Wray
Mormon Lake -----	SCS and SRVWUA
Mormon Mountain -----	SCS and SRVWUA
Mt. Ord -----	Jim Sparks
Munds Park -----	SCS and SRVWUA
Newman Park -----	SCS and SRVWUA
Nutrioso -----	Forest Service - Curtis Connolly
Pacheta -----	Foch Phillips
Redstone Trail -----	James R. Wray
Rose Canyon -----	Forest Service - Allan Hinds
Silver Creek Divide -----	James R. Wray
Smith Cienega #1 -----	Jim Sparks
Smith Cienega #2 -----	Jim Sparks
Snow Bowl #1 -----	Forest Service - Richard Nielsen
Snow Bowl #2 -----	Forest Service - Richard Nielsen
State Line -----	Forest Service - Joe Clayton
White Spar -----	SCS - Bill Gray
Whitewater -----	Ray Freeman
Willow Ranch -----	Tiny Miller
Wilson Lake -----	SCS and SRVWUA
Workman Creek -----	Rocky Mountain Forest & Range Exp. Station

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# The Following Organizations Cooperate in the Arizona Snow Survey Work

## FEDERAL

Department of Agriculture

Soil Conservation Service

Forest Service

Apache Forest

Coconino Forest

Coronado Forest

Gila Forest

Kaibab Forest

Prescott Forest

Rocky Mountain Forest and Range Experiment Station

Tonto Forest

Department of Commerce

Weather Bureau

Arizona Section

Department of Interior

Bureau of Reclamation

Region III

Geological Survey

Arizona District

Bureau of Indian Affairs

Fort Apache Reservation

San Carlos Irrigation Project

National Park Service

Grand Canyon National Park

Gila Water Commissioner

Safford, Arizona

## STATE

Arizona Agricultural Experiment Station

## IRRIGATION PROJECTS

Salt River Valley Water Users' Association

Phoenix, Arizona

San Carlos Irrigation and Drainage District

Coolidge, Arizona

## PRIVATE

Southwest Forest Industries, Inc.

McNary, Arizona

Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.

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